

AMENDMENTS TO THE CLAIMS

Claims 1 to 46 (Cancelled)

47. (New) An emulsified fuel containing a major proportion of an emulsion of water and of liquid hydrocarbons with a water/hydrocarbons weight ratio ranging from 5/95 to 35/65, which contains an emulsifying system comprising at least 15 wt.% of an ester of fatty acid and of polyoxyalkylated polyol, and of at least one member selected from the group consisting of the esters of fatty acid and of sorbitan and the products of condensation of a succinic acid or anhydride with at least one amine, polyamine, fatty acid, (poly) oxyalkylated fatty acid, alcohol, (poly) oxyalkylated alcohol and mixtures of these compounds.

48. (New) The fuel according to claim 47, wherein the fatty acids included in the composition of the sorbitan esters are linear or branched, saturated or unsaturated, and contain from 6 to 22 carbon atoms.

49. (New) The fuel according to claim 48, wherein said fatty acids are selected from the group consisting of lauric, palmitic, stearic, oleic, linoleic, linolenic acids and mixtures thereof.

50. (New) The fuel according to claim 47, wherein said sorbitan esters include at least one sorbitan oleate.

51. (New) The fuel according to claim 50, wherein said esters include at least one ester selected from the group consisting of sorbitan monooleate and sorbitan sesquioleate.

52. (New) The fuel according to claim 47, wherein the polyols of the polyol ester correspond to alcohols containing from 2 to 5 hydroxyl groups.

53. (New) The fuel according to claim 47, wherein the polyols of the polyol ester correspond to alcohols selected from the group consisting of alkylene glycols, glycerol, pentaerythritol, their alkylated derivatives and their mixtures.

54. (New) The fuel according to claim 47, wherein the fatty acids included in the composition of the polyol ester are linear or branched, saturated or unsaturated, and contain from 6 to 22 carbon atoms.

55. (New) The fuel according to claim 47, wherein the fatty acids included in the composition of the polyol ester are selected from the group consisting of fatty acids that occur naturally, in free or esterified form, in vegetable oils, animal oils or both.

56. (New) The fuel according to claim 47, wherein the polyoxyalkyl groups present in the polyol ester are a chain of identical or different oxyalkyl units, each oxyalkyl unit containing from 1 to 5 carbon atoms.

57. (New) The fuel according to claim 47, wherein the polyoxyalkyl groups present in the polyol ester contain at least one polyethoxy group.

58. (New) The fuel according to claim 47, wherein, for the polyol ester, the average number of moles of oxyalkyl units per mole of ester is between 3 and 50.

59. (New) The fuel according to claim 58, wherein, when fatty acid included in the composition of the polyol ester is glycerol, the average oxyalkyl units per mole of ester is number of moles between 10 and 35.

60. (New) The fuel according to claim 47, wherein the polyol ester is constituted completely or partially of a triester of fatty acid(s) and of polyoxylalkylated glycerol or of a mixture of said triesters.

61. (New) The fuel according to claim 47, wherein the polyol ester is constituted completely or partially of oxyalkylated vegetable oil, animal oil or both.

62. (New) The fuel according to claim 61, wherein the polyol ester is constituted completely or partially of ethoxylated vegetable oil.

63. (New) The fuel according to claim 62, wherein the vegetable oil is selected from the group consisting of colza oil, soya oil, castor oil, sunflower oil, palm oil, oils extracted from resinous trees and mixtures of said oils.

64. (New) The fuel according to claim 47, wherein the polyol ester is a diester of polyalkoxylated alkylene glycol.

65. (New) The fuel according to claim 64, wherein the polyol ester is a dioleate of polyethoxylated ethylene glycol, with molecular weight between 200 and 1000.

66. (New) The fuel according to claim 47, wherein the polyol ester is present at a content varying from 0.5 to 5 wt.%.

67. (New) The fuel according to claim 47, wherein the polyol ester is present at a content varying from 0.5 to 2 wt.%.

68. (New) The fuel according to claim 47, wherein the emulsifying system contains from 15 to 100 wt.% of at least one polyol ester, and of at least one member selected from the group consisting of sorbitan ester and the products of condensation of a succinic acid or anhydride with at least one amine, polyamine, fatty acid, (poly) oxyalkylated fatty acid, alcohol, (poly) oxyalkylated alcohol and mixtures of these compounds.

69. (New) The fuel according to claim 47, wherein the emulsifying system contains from 15 to 100 wt.% of at least one sorbitan ester combined with at least one polyol ester in a weight ratio sorbitan ester/polyol ester varying from 20/80 to 80/20.

70. (New) The fuel according to claim 69, wherein, in the emulsifying system, the weight ratio sorbitan ester/polyol ester varies from 40/60 to 60/40.

71. (New) The fuel according to claim 47, wherein the said at least one member selected from the group consisting of the esters of fatty acid and of sorbitan and the condensation products is present at a content varying from 0.5 to 5 wt.%.

72. (New) The fuel according to claim 47, wherein the said at least one member selected from the group consisting of the esters of fatty acid and of sorbitan and the condensation products is present at a content varying from 0.5 to 2 wt.%.

73. (New) The fuel according to claim 47, wherein the emulsifying system contains from 0 to 85 wt.% of at least one product of condensation of a succinic acid or anhydride with at least one amine, polyamine, fatty acid, (poly) oxyalkylated fatty acid, alcohol, (poly) oxyalkylated alcohol and mixtures of these compounds.

74. (New) The fuel according to claim 47, wherein the emulsifying system contains from 15 to 85 wt.% of at least one polyol ester and from 85 to 15% of at least one condensation product.

75. (New) The fuel according to claim 47, wherein the succinic acid or anhydride of the condensation product is substituted by a hydrocarbon radical.

76. (New) The fuel according to claim 47, wherein the succinic acid or anhydride of the condensation product is substituted by a polymeric radical.

77. (New) The fuel according to claim 47, wherein the succinic acid or anhydride of the condensation product is substituted by a polyisobutyl radical.

78. (New) The fuel according to claim 47, wherein the emulsifying system contains from 20 to 50 wt.% of at least one polyol ester and from 50 to 80% of at least one condensation product.

79. (New) The fuel according to claim 47, wherein the emulsifying system further comprises at least one alcohol containing from 3 to 22 carbon atoms.

80. (New) The fuel according to claim 79, wherein the alcohol comprises at least one saturated branched alcohol.

81. (New) The fuel according to claim 79, wherein the weight ratios alcohol/polyol ester and alcohol/sorbitan ester are identical or different and both are less than or equal to 1.

82. (New) The fuel according to claim 79, wherein it contains from 0.1 to 5 wt.% of said alcohol.

83. (New) The fuel according to claim 47, wherein the hydrocarbon phase comprises one or more hydrocarbon fractions selected from the group consisting of the gasoline fractions, middle distillates, biofuels, and mixtures of said fractions.

84. (New) The fuel according to claim 47, wherein the hydrocarbon phase comprises one or more hydrocarbon fractions selected from the group consisting of kerosene fractions and gas oil fractions, biofuels, and mixtures of said fractions.

85. (New) The fuel according to claim 47, wherein the hydrocarbon phase comprises one or more fractions selected from the group consisting of intermediate vacuum distillates, heavy vacuum distillates, distillation residues and mixtures of said fractions.

86. (New) The fuel according to claim 47, wherein its sulfur content, determined according to standard NF M 07-100, is less than or equal to 1 wt.%.

87. (New) The fuel according to claim 47, wherein its sulfur content, determined according to standard NF M 07-100, is less than or equal to 0.2 wt.%.

88. (New) The fuel according to claim 47, wherein its sulfur content, determined according to standard NF M 07-100, is less than or equal to 0.1 wt.%.

89. (New) The fuel according to claim 47, wherein its sulfur content, determined according to standard NF M 07-100, is less than or equal to 10 ppm.

90. (New) The fuel according to claim 47, wherein it additionally comprises at least one cetane number improver.

91. (New) The fuel according to claim 47, wherein it additionally comprises at least one cetane number improver selected from the group consisting of the organic or inorganic nitrates, the organic peroxides and mixtures of these two types of compounds.

92. (New) The method of preparation of an emulsified fuel according to claim 47, by forming an emulsion of hydrocarbons and water, in the presence of the emulsifying system.

93. (New) The method according to claim 92, comprising the steps of mixing the emulsifying system with the hydrocarbon phase, then passing the resulting mixture one or more times through an emulsor system supplied with the water necessary for forming the emulsion.

94. (New) The method according to claim 92, comprising the following stages:

(a1) premixing of the water and the emulsifying system, followed by dispersion in the hydrocarbon phase, or

(a2) simultaneous mixing of the hydrocarbon phase with the water and the emulsifying agent, then

(b) emulsion formation proper, by means of a suitable device.

95. (New) The method according to claim 94, wherein in step (b) the suitable device is selected from the group consisting of rotor-stators, emulsors, static mixers, in-line turbine systems, and ultrasonic shakers.

96. (New) A composition of emulsifying additives comprising at least 15 wt.% of an ester of fatty acid and of polyoxyalkylated polyol, and of at least one member selected from the group consisting of the esters of fatty acid and of sorbitan and the products of condensation of a succinic acid or anhydride with at least one amine, polyamine, fatty acid, (poly) oxyalkylated fatty acid, alcohol, (poly) oxyalkylated alcohol and mixtures of these compounds.

97. (New) The additive composition according to claim 96, further comprising at least one alcohol containing from 3 to 22 carbon atoms.

98. (New) The additive composition according to claim 96, further comprising at least one cetane number improver.

99. (New) The additive composition according to claim 96, in the form of a mixture of the additives, or in the form of a concentrated solution of said additives in a suitable solvent.

100. (New) A method of improving the thermal stability of an emulsified water/liquid hydrocarbons fuel, by using a composition of emulsifying additives according to claim 96.

101. (New) The use of an emulsified fuel according to claim 47 as fuel for heat engines or fuel cells, or as fuel for thermal machines.

102. (New) The use of an emulsified fuel according to claim 47 as fuel for thermal machines selected from the group consisting of industrial or domestic boilers, furnaces, turbines and generators.

103. (New) The use of an emulsified fuel according to claim 47 as diesel engine fuel or as fuel for domestic boilers.